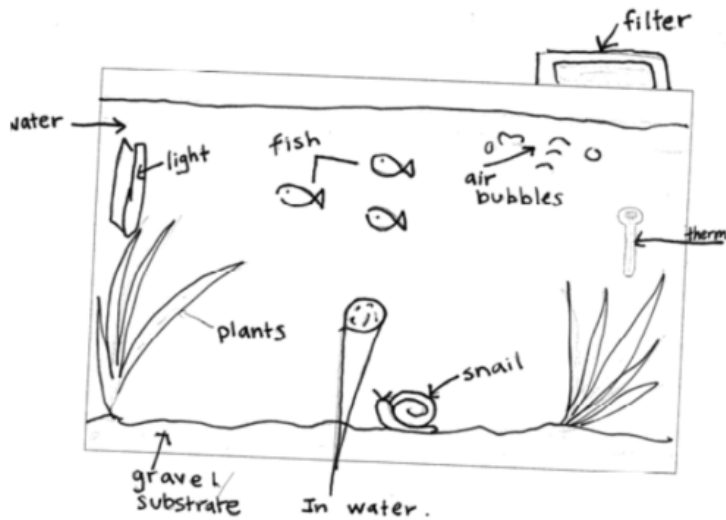
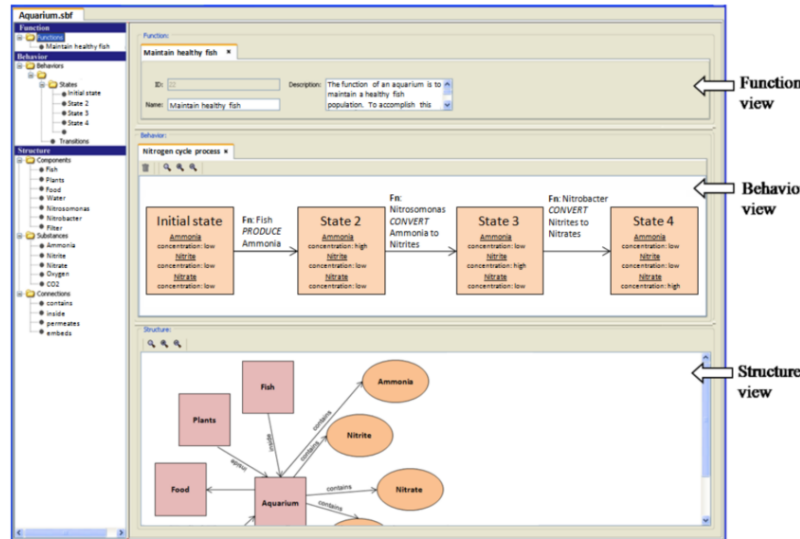
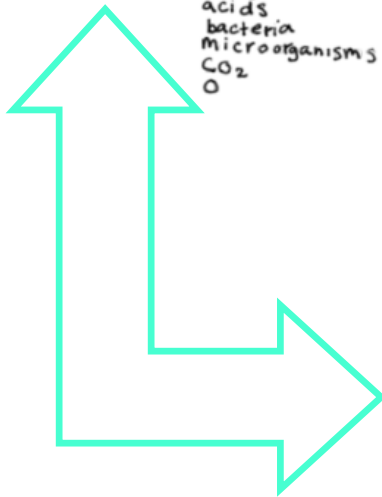




Outline



- Introduction
- Aims
- References



FBS modelling (Vattam et al., 2011)

Strategy Gallery Comments

Created: 2012-07-30
Updated: 2012-07-30

Eyes are anti-reflective: elephant hawk-moth

Eyes of nocturnal moths are anti-reflective due to nanoscale protrusions.

Biomimicry Taxonomy

- Maintain physical integrity >
- Protect from biotic factors >
- Animals

Biomimetic Application Ideas

Anti-reflective, anti-glare, self-cleaning coatings for solar cell collectors, windows, computer screens, flat-panel displays, vehicle dashboards, and optical elements. Super-hydrophobic coatings to prevent contamination, erosion, and bacterial accumulation. Improve the conversion efficiencies of crystalline silicon solar cells by mimicking moth eyes.

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SUMMARY
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ABOUT THE INSPIRING ORGANISM
BIOINSPIRED PRODUCTS AND APPLICATION IDEAS
EXPERTS
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According to the Darwinian vision of evolution, biological systems, processes, and materials that resulted from a refinement process of 3.8 billion years are likely to be very resistant, energy efficient and well integrated with the environment. This basic and simple idea is at the basis of Bio-Inspired Design (BID), a design method that relies on Nature as a source of inspiration for inventive design tasks and for solving complex engineering problems. Notwithstanding their potentials, biological systems are still marginally used as references for triggering the generation of inventive solutions.

The lack of efficient means for supplying to designers and engineers the information about the lessons learned from Nature is certainly one of the main obstacles to the exploitation of such incredibly rich knowledge base. In the past decades, several scientists endeavoured to study and develop Biomimetic solutions both for industrial and scientific purposes; nevertheless, only recently, systematic investigations of the Bio-Inspired Design approaches emerged.

Even though several BID models appeared in engineering design literature during the last decade, none of them has still been adopted as a common basis for the development of further design tools and methods. The research faced in this field is hence focused in easing knowledge transfer from biological to engineering field on the basis of the ontology built by synergically merging existing models



Next steps consist in

- the construction of a comprehensive model suitable to represent all the information that could be meaningful for bio-inspiration purposes [1] [2] [4].
- the development of specific tools focused on specific stages of a BID process, compliant with the UNO-BID ontology and, as such, mutually compatible [2] [3] [4].
- the development of specific case studies to validate the existing ontology, as well as the global model or more specific tools [2] [3].



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